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Journal of the Society of Arts.

FRIDAY, JULY 17, 1863.

WOOD-CARVING EXHIBITION.

The Council have decided to hold another Exhibition of Wood-Carvings next year, and to offer Prizes for competition, the particulars of which will be duly announced.

EXAMINATIONS, 1863.

The papers of questions set at the Society's Final Examinations in May last, are now published, and may be had of the Society's publishers, Messrs. Bell and Daldy, Fleet-street, price 6d.

INTERNATIONAL EXHIBITION AT PARIS IN 1867.

The following notice appeared in the *London Gazette* of the 14th inst.:—"The Board of Trade have received a copy of a French Imperial Decree, providing that a Universal Exhibition of agricultural and industrial productions shall take place at Paris in 1867, in the Palace of Industry, Carré de Marigny. The Exhibition will be opened on the 1st of May of that year, and will be closed on the 30th of September following. The productions of all nations will be admitted. A further decree will determine the conditions to be observed and the nature of the various articles which will be admitted."

THE COLONY OF VICTORIA, AUSTRALIA.

The following particulars have been compiled by Mr. J. G. Knight, F.R.I.B.A., Secretary to the Commissioners for Victoria at the International Exhibition of 1862, and Honorary Secretary of the Victoria Emigrants' Assistance Society:—

The Australian continent is at present divided into five distinct colonies—each being perfectly free and independent of the other, and (with the exception of Western Australia) each having a political constitution and parliament of its own choice. From the official documents circulated by the Colonial Commissioners in the International Exhibition, it appears that in 1861 the population of these colonies and of Tasmania was as follows:—

Victoria	540,322
New South Wales	350,860
Queensland	30,059
South Australia	128,000
Western Australia	16,000
Tasmania...	89,977

It will thus be seen that Victoria possesses the greatest number of inhabitants of any colony in Australia; but, comparatively large as this may seem, it is insignificant viewed in relation to the capacity of the country; the area of Victoria being 86,831 square miles, or about the size of England, Scotland, and Wales united.

The extraordinary increase of population in Victoria may be judged by the following extract from a pamphlet circulated by the Commissioners for that colony, at the International Exhibition or 1862:—

> "In the year 1836, the census of Port Phillip, now called Victoria, gave the following returns:—Males, 142; females, 35—total, 177. At that time, and up to the year 1851, Port Phillip was a province of New South Wales. The population of the latter in 1836 was 77,096. In 1851, Victoria was separated from the government of New South Wales, and started as an independent colony, with 77,345 inhabitants. The population of the adjoining and parent colony was at that time 197,168 persons, or 119,823 more than Victoria.
>
> "Since the year 1851, the increase of population in Victoria has been unprecedented in the annals of British colonies. In 1861, the census enumeration gave the following numbers:—Males, 328,651; females, 211,671—total, 540,322 persons, or 189,462 more than the parent colony of New South Wales."

Should further proof be needed to illustrate the wonderful advancement of Victoria during the last few years, it is supplied by a statement appended to a volume of the *Ballarat Star*—a newspaper shown in the Victoria Court, at the International Exhibition—with the following preface:—

> "When the Great Exhibition of 1851 was opened, the only habitation on the site of the present town of Ballarat was a shepherd's hut, built of slabs of wood, and roofed with bark. In a circle, having Ballarat as a centre, with a radius of forty miles, the population then did not exceed 500 persons, and consisted of a few sheep-farmers and their dependents. The population of the same area, when the census was taken in 1861, was 105,996 persons. At the same date the population of the town of Ballarat was 22,111 persons. At the present time (December, 1861), in the district around the town of Ballarat, there are published four bi-weekly newspapers, and in the town of Ballarat one weekly and two daily newspapers."

CLIMATE.

The climate of Victoria is most genial, closely resembling that of Italy. The mean temperature of the air, according to the observations of Professor Neumayer, extending over a number of years, is 57° 6″; the clearness and purity of the atmosphere exercising a strong influence on the habits and temperament of the inhabitants, who certainly appear more cheerful, buoyant, and happy than those who dwell in colder latitudes. Notwithstanding the general beauty and serenity of the climate of Victoria, it is not denied that occasionally, in the summer months, the hot winds are unpleasant and trying, but these drawbacks are not of frequent occurrence, very rarely exceeding twelve hours in duration at one time, and are not so severe in Victoria as in the neighbouring Australian colonies. The north winds, although at the time disagreeable, are of great sanitary advantage in preventing malaria; and there is always this comfort to sustain one under their influence, that they are invariably succeeded by invigorating and refreshing breezes from the south. As a whole, so delightful is the climate that colonists returning to Europe look back to Victoria with regret, and in few instances are they able to endure the east winds and fogs of England.

From the elaborate statistics compiled by the Registrar-General of the colony, it is manifest that intending emigrants have nothing to fear on the score of general health. The rate per cent. of births, marriages, and deaths in Victoria as compared with England is as follows:—

	Victoria.	England.
Births	3·834 ...	3·406
Marriages... ...	1·031 ...	0·826
Deaths	1·941 ...	2·229

It will thus be seen that there are proportionally more births and marriages, and fewer deaths, in Victoria than in England.

MINERAL PRODUCTS.—GOLD.

Notwithstanding the general ignorance which prevails with regard to the position held by Victoria in the group of distinct colonies comprised by the continent of Australasia, its great mineral wealth has exercised a most important and beneficial influence on the monetary affairs of Europe during the last few years.

Those who visited the Exhibition of 1862, will doubtless remember the "gold trophy" which stood under the eastern dome. This pyramid represented the mass of gold exported by the colony of Victoria in ten years ending the 1st of October, 1861, the quantity being 26,162,432 oz. troy, or 800 tons 17 cwt. 3 qrs. 7 lbs., and its value £104,649,728 sterling. The pyramid is now erected at the Crystal Palace, a base being added to show the further quantity produced in the year ending Oct. 1st, 1862, this being 1,817,408 oz., or 55 tons 12 cwt. 2 qrs. 22¼ lbs., of the value of £7,269,632.

The yield of gold from the mines of Victoria is very commonly attributed to Australia generally, but this is a great mistake. The figures above quoted refer to the colony of Victoria alone, and do not include the gold-fields of New South Wales and New Zealand, from whence also large quantities of the precious metal are constantly being added to the wealth of the world. The largest nuggets or lumps of gold ever discovered in the world have been found at Victoria; one of these nuggets, called the "Welcome," found at Ballarat, sold for £10,500; another, the "Blanche Barkly," sold for £6,905; another, the "Sarah Sands," sold for £5,532; two others, sold at Dunolly for £5,500; another, called the "Lady Hotham," valued at £3,020. Two nuggets found at Ballarat sold for £7,500. The "Heron" nugget, value £4,080, was found by two young men who had been only three months in the colony. In August, 1860, a nugget of the value of £3,336 was found at Ballarat, at a depth of 400 feet from the surface. About the same time one was found at Kingower worth £3,220 within a foot of the surface. Similar lumps of gold have been discovered from time to time within a few feet of the surface, while in the great reefs and deep sinkings, some of which have now reached a depth of between 500 and 600 feet, rich deposits of the precious metal are constantly being met with.

Since the discovery of gold in Victoria, hundreds of nuggets have been found, and they are still frequently to be met with; by every monthly mail received from the colony instances of such discoveries are recorded. The last "nugget" of importance was found at Dunolly, on the 14th of January, 1863, its weight being 20 lbs. 7 oz., and its value £988. It was found at a depth of 14 feet, in a deserted claim, by a man who had only been about five minutes on the ground.

That the goldfields of Victoria are likely to afford profitable employment for ages to come to a great body of miners may be reasonably inferred from the able reports of Mr. Selwyn, the Government geologist, according to whose opinion the extent of ground in Victoria, which is more or less auriferous, is upwards of 20,000 square miles, or about one-quarter of the entire area. This does not include Gipps Land on the eastern coast of Victoria, as the geology of that district has not been investigated, but there also extensive gold fields have been discovered. The extent of ground which is supposed to have been exhausted in mining during the past eleven years, and from which gold to the value of £112,000,000 sterling has been produced, does not exceed 160 square miles. Within the last few years great improvements have taken place in the several branches of gold mining, especially in the extraction of gold from quartz. This work is now conducted on a large scale, and with machinery and scientific appliances of a very superior kind, so that quartz which was formerly considered too poor for crushing, and which in some cases did not contain more than four or five dwts. of gold to the ton, can even with that small per-centage be now worked at a profit. The value of the mining plant employed in Victoria is estimated by Mr. Brough Smyth, secretary for mines, at £1,299,303.

Victoria is not only rich in gold; silver has recently been discovered, and one or two mines are now being successfully worked. Tin ore and antimony are abundant, and large shipments of these valuable minerals are made to Europe. A block of antimony, weighing half a ton, was exhibited in the court of the International Exhibition.

Iron ore abounds in many parts of Victoria, and in the neighbourhood of Sandhurst thousands of tons are exposed on the surface of the earth.

The existence of coal was known in Victoria many years ago, but not till very lately has any attempt been made to develope the coal fields of the colony. A company is now profitably employed in working a coal-mine at Cape Patterson, and already a large quantity of excellent coal has been forwarded to Melbourne. The development of the coal-fields of Victoria will prove a powerful impetus to many new branches of manufacturing industry.

Kaolin, another mineral product of great utility, exists in inexhaustible quantities in many parts of Victoria; and in one district, Bulen, not far from Melbourne, a company is now profitably employed in manufacturing kaolin into a variety of useful articles. Immense beds of pipe-clay, from which the finest pottery can be made, are spread over many parts of the colony.

Many diamonds have been accidentally found in the Buckworth district. Mr. Martin, an extensive diamond merchant of London, who has examined some of the diamonds from Victoria, is of opinion, from the nature of the locality in which they have been met with, that a lucrative trade in diamonds would be opened if proper means were adopted to prospect the creeks in which these precious stones have been discovered.

Wool.

Next to gold in point of value, but, perhaps, of primary importance in point of utility, the wool produce of Victoria affords the most astonishing evidence of the material progress of the colony.

In the year 1837 the quantity of wool exported was of the value of £11,639. In the year 1862 the quantity was 87,055 bales, or 26,812,940 lbs., of the value of £2,234,416.

The following statistics of wool imported into Great Britain, for the year 1862, are published by Messrs. Gooch and Cousens, of London:—

	Bales.
Victoria	87,055
New South Wales and Queensland . .	59,130
South Australia	34,020
New Zealand	26,658
Tasmania	16,862
Western Australia	2,290
Total (called Australasian) .	226,015
Cape of Good Hope	66,841
East India	52,749
Germany	29,238
Spain	1,994
Portugal	11,482
Russia	40,302
Sundry other places	139,047
Total	567,668

It will thus be seen that the colonies called "Australasian" export nearly one-half of all the wool received by Great Britain during the past year.

The export of tallow and hides from Victoria for ten years ending 1860, amount to—

Tallow	£552,339	0	0
Hides	796,203	0	0
The imports to Victoria for the year 1862 amounted to ...	12,788,696	0	0
And the exports to	12,314,062	0	0
The Revenue for the past year (1862) was	3,131,420	7	4
Against in 1861	2,886,091	13	10

Showing an increase of £245,328 13s. 6d.

The spirit and energy which characterise this colony (it is but twenty-seven years since it was first started, with a gross population of 177 persons, and but twelve years since it was made an independent colony) may be gathered from the following statement of expenditure made on public improvements during the last few years:—

From 1851 to 1860 the amount of Government expenditure on sundry Public Works was	£4,211,753
On public Roads and Bridges from 1851 to December, 1861	5,272,620
Government Railways to Geelong, Ballarat, Castlemain, and Sandhurst, 219 miles ...	7,828,233
Lines of Electric Telegraph, 1,504 miles, and stations	163,000
The cost of supplying water to Melbourne, was	820,000

The reservoir for last-named purposes at Yan Yean covers an area of 1,300 acres, at an average depth of 18ft. The reservoir is 595ft. above the city, and 19 miles from the city.

In addition to the Government railways, there are several suburban lines under the management of public companies.

There are 600 miles of main road formed and macadamised, and 500 miles of main road cleared. These are independent of the roads within the jurisdiction of the various corporations and municipalities throughout the colony.

The Post-office revenues for the year 1861 amounted to £127,869, and the expenditure to £109,479. In the conveyance of the inland mails, the number of miles travelled was 1,511,381. The number of post-offices in Victoria in that year was 365; 5,166,149 letters, and 2,818,761 newspapers were posted in the course of the year. 1,762,566 letters, and 2,086,979 newspapers received and despatched by ship during the above time.

There are 884 places of public worship, with accommodation for 150,000 persons. There are 665 public schools, having 46,687 scholars, and receiving government aid to the amount of £110,155 per annum. There are 221 private schools, with 4,981 scholars.

The Melbourne University has 104 students, and confers degrees, which, by the pleasure of her Majesty, are equal in rank and consideration with the Universities of Great Britain. The public library contains 30,000 volumes, and is attended on an average by 485 readers daily. The Museum of Arts, recently opened, has been visited on an average by 200 persons daily.

The number of hospitals, benevolent institutions, and asylums (there are no workhouses) in Victoria is thirty, receiving government aid to the amount of £90,894, and private contributions amounting to £53,718 per annum. There are about 4,000 volunteers in the colony, comprising cavalry, artillery, engineers, and riflemen, who are all in a highly efficient state of drill. The colonial government has in contemplation a comprehensive scheme of coast defences.

In 1860 there were ten savings banks, having 11,349 depositors, with a total balance of £540,622 ; equal to an average of £47 12s. 9d. per head.

Agriculture.

The cereals grown in Victoria are generally admitted to be equal to the best of similar produce in any part of the world. The samples of wheat and oats shown at the International Exhibition were pronounced by the jurors to be the finest collection ever exhibited, in proof of which opinion it is sufficient to say twenty-five medals, and twenty honourable mentions were awarded to Victorian grain, by far the highest commendation given to any British colony. Samples of this produce may still be seen at the office of the Victoria Emigration Assistance Society, 27A, Bucklersbury, London, E.C. Fruits of all kinds grow in profuse abundance, and attain a great size (the collection of model Victorian fruits, which were shown at the Exhibition, may now be seen at the Royal Horticultural Gardens, Kensington, and the Royal Botanic Gardens, Kew). The cultivation of the vine is rapidly extending in many parts of Victoria, and it is confidently expected that in a few years' time the colony will carry on a large and profitable export trade in wine. In the mean time the local demand for colonial wine is already sufficient to cause a sensible reduction of the duties received on imported wine, beer, and spirits. It is calculated that a vineyard will yield on the average a profit of £100 an acre per annum.

Cotton.—Many parts of the colony are well adapted for the growth of cotton, and some of the colonists have commenced its cultivation.

Flax can be grown in most parts of the colony, and the silk worm thrives remarkably well; its favourite food, the mulberry, grows here in great perfection.

Arrowroot.—This plant thrives well, and can be easily and profitably cultivated.

Tobacco.—The growth of this plant is now being carried out on a large scale, a considerable impetus being given to this branch of agriculture by an eminent firm in Melbourne offering £110 per ton for all the leaf tobacco supplied to them.

The olive, orange, lemon, pine apple, melon and other tropical fruits thrive well in the open air and require but little attention. The experiments which have been tried on the tea plant, &c., go to prove that it could be successfully cultivated in Victoria.

Building Materials.

The materials required for building purposes are plentiful throughout the colony, and samples of several kinds may be inspected at the office in Bucklersbury. Bricks equal to any made in England, stone of various qualities, from granite to the softest free stone, and a variety of useful and ornamentat descriptions of timber afford every facility for building either temporary huts or permanent and handsome edifices, at a reasonable cost.

Social Condition.

A glance at the last census of Victoria, wherein the occupations of the people are clearly stated, will show that the community at large is settled down to the ordinary pursuits of life, and those who have recently visited the colony will attest that law, order, and morality are as well, if not better observed, in Victoria than in England.

Life and property are certainly safer at the " Antipodes." Shutters to houses are rarely applied, and in the summer months the windows in most cases are left open—a proof that there is but little petty larceny. The fashion of " garotting " has not been introduced, and the evil disposed are kept in check by an admirably conducted administration of police.

Occupation of Land.

After some years of controversy a comprehensive land law has been enacted by the Parliament of Victoria, which certainly gives to the new comer a great advantage over the old settler in the colony. Many large tracts of land, which under the former system of sale by auction would have realised £20 to £30 per acre, can under the new regulations be obtained, by selection, at 20s. per acre—one-half of which is on long credit.

A pamphlet, fully explanatory of the measure, prepared by the Hon. C. G. Duffy, the Minister of Lands, has been freely circulated throughout the kingdom, and can be had at the office of the Emigration Society, gratis.

It appears that there are ten million acres of good agricultural land available for settlement, in addition to large areas reserved for public use, as public commons, and unstocked country, suitable for sheep and cattle stations. The land in the agricultural areas is divided into farms, varying from 40 to 640 acres, and is sold at the uniform price of £1 per acre. The purchaser can pay at that rate for one half the farm selected by him, and rent the other half for eight years, at 2s. 6d. per acre, at the end of which time the land so rented becomes his property.

LABOUR.

The following rates are quoted in "Warman's Weekly Circular," January 19th, 1863:—

WITHOUT RATIONS.

Carpenters, per day, 8 hours	8s. to 10s.
Masons, ditto	10s.
Bricklayers & Plasterers } ditto	8s.
Blacksmiths ditto	10s.
Quarrymen ditto	6s.
Able pick and shovel men, 1s. per hour, or	7s.
Fencers, 3 rails, 2s. to 2s. 6d. per rood.	

WITH RATIONS.

First-class Ploughmen, per week	20s.
Bullock drivers ditto	15s. to 20s.
Ploughmen, from 3 to 6 months hire, per ann.,	£40 to £45
Mowers, per acre, from	3s. 6d. to 5s.
Haymakers, per week...	20s.
Binders ditto	25s. to 30s.
Reapers, per acre, and according to crop	14s.
Cradlers, from	25s. to 30s.
Garden labourers, per week	15s.
Milkmen	15s. to 20s.
Gardeners, per annum	£52 to £55.
Shepherds, ditto	£30 to £35.
Cooks, per week, from	20s. to 45s.
Waiters, from	20s.

Customary rations per week are, 12 lbs. flour, 12 lbs. meat, 2 lbs. of sugar, ¼ lb. tea.

FEMALE SERVANTS.

Cooks and Laundresses, per annum	£30 to £35
Housemaids ditto	£26 to £30
Competent women for general house work	£30
Upper-class Housemaids	£26
Nurse girls, from	£14 to £20
Needlewomen	£26 to £30
If they are dressmakers	£35

Really good servants in private houses frequently obtain higher wages than the above rates. The writer of this, who returned from Victoria a year ago, paid his cook £40; housemaid, £33; nursemaid, £28. They were excellent servants, and had been in his service for some years.

It is not unusual for young women in domestic service, who are well conducted and good looking, to marry persons in thriving circumstances, and to be comfortably settled in life; but it is a great mistake for young women who contemplate emigrating to any part of Australia to suppose that they are likely to have offers of marriage directly they arrive in the colonies. The young men in Australia are as cautious in selecting eligible and useful wives as in England.

It is but reasonable to suppose that where labour can command remunerative wages, capital can also be most profitably invested. Such is certainly the case in Victoria; money commands a highly remunerative rate of interest, and a large field exists for opening up new industries and manufacture. There is ample scope for the safe investment of capital in mining; sheep farming, cattle and dairy stations; vineyards, and general agriculture; the formation of tributary lines of rail and tram-ways; irrigation, and various other sources of essential benefits to the colony, and of increased wealth to the capitalist. The high dividends paid by the Colonial Banks also prove that there is abundant employment for money.

COST OF LIVING.

The following are the current prices of some of the necessaries of life:—

	s.	d.		£	s.	d.
Fine Flour, per ton				12	10	0
Potatoes, per cwt.				0	9	0
Fresh Butter	2	0	to	0	2	3
Beef, per lb.	0	4	to	0	0	5
Mutton „	0	3	to	0	0	4½
Veal „	0	7	to	0	0	9
Pork „	0	8	to	0	0	9
Turkeys, each	10	0	to	0	12	0
Geese, per pair	8	0	to	0	10	0
Ducks, „	6	6	to	0	8	0
Fowls, „	5	6	to	0	7	0
Eggs (fresh), per doz.	1	6	to	0	2	0

The rent of a four-roomed cottage is from 5s. to 10s. per week.

The above rates are taken from the *Argus*, of January, 1863, at which time, the middle of an unusually hot summer, the prices of many things would be dearer than at any other time of the season.

In May, last year (1862), the following rates were quoted:—

	s.	d.		s.	d.
Beef, per lb.	0	2	to	0	4½
Mutton „	0	3	to	0	4½
Turkeys, each	6	0	to	8	0
Geese, per pair	8	0	to	12	0
Ducks „	5	0	to	5	6
Fowls „	4	0	to	5	0
Bread, 4lb. loaf	0	6	to	0	7
Milk, per quart				0	6
Potatoes, per cwt.	5	6	to	6	0

The rates will probably be about the prices at a corresponding period of the current year.

The Customs-duties being low, and a direct trade in produce being carried on with all parts of the world—tea (2s. 6d.), coffee (1s. 6d.), sugar (4d.), tobacco (4s. 6d.), wine, spices, &c., are always cheaper than in England; and the consumption per head of most of them is double that in this country. Spirits alone show of late years a steady diminution in consumption.

The extensive and varied collection of produce shown by Victoria at the International Exhibition was the subject of general praise and favourable comment in all the reviews and notices of that national enterprise. The display made by this colony has been officially pronounced as "embracing the largest and most varied collection of objects ever sent by a British colony to Europe:" a judgment which appears to be verified by the following list of awards made by the jurors of the International Exhibition.

	Medals.		Honourable Mentions.
Victoria	111	...	92
New South Wales ...	76	...	50
South Australia ...	25	...	18
Queensland	26	...	20
Western Australia ...	15	...	12
Tasmania	38	...	26
New Zealand ...	31	...	11
Canada	60	...	26
India	133	...	90

In referring specially to Victoria as a field for emigration, it is not for one moment intended to draw invidious comparisons between it and the neighbouring colonies of Australia, all of which present advantages, and hold out inducements to the surplus working population of Great Britain, of which few are aware. The aim of this little sketch is to point out some of the characteristics of this particular colony, and by reference to statistics to suggest that a country which could develop so much in so short a space of time is capable of doing much more in future.

EMPLOYMENT OF CRYOLITE IN MANUFACTURES.

The following is extracted from the *Chemical News*:—

A few years ago cryolite was found only as rare specimens in mineralogical collections. M. H. Rose was the first to propose this mineral as a raw material for the manufacture of chemical products. On the discovery of large deposits of this body, he indicated its utilisation in the manufacture of soap. He had remarked that by boiling cryolite, which is a double fluoride of aluminium and sodium, with milk of lime, a double decomposition took place, giving rise to fluoride of calcium, an insoluble compound, and soluble aluminate of soda, which is available instead of caustic soda in the saponification of fatty matters.

In 1860, M. Weber, of Copenhagen, obtained from the Danish Government the monopoly of the cryolite deposits in Greenland. In his manufactory he treats the mineral by sulphuric acid, and transforms the resulting sulphate of soda into carbonate of soda and sulphate of alumina.

In 1860, MM. Müller, of Berlin, and Hasberg, of Harbourg, entered into an agreement with M. Weber, who undertook to furnish them with 1,000 tons of cryolite per annum. This cryolite M. Hasberg decomposes in the following manner:—

The mineral is broken up and ground in vertical cast-iron mills. This is easily effected, and the mineral is then sifted by means of inclined bolters.

One hundred parts of this cryolite are mixed with 127 parts of carbonate of lime also reduced to powder. These quantities correspond to one atom of cryolite and six atoms of calcareous carbonate. The mixture is placed in a reverberatory furnace with two compartments, and heated with coke. The operation is two-fold,—that is to say, the mass is first dried in the cooler part of the furnace, and then made red-hot in the other. When properly heated, the mass is withdrawn by means of fire-irons, and thrown on a grating, which retains the conglomerated pieces. These pieces are pounded, and used in the following operation.

Cryolite is transformed into aluminate of soda and insoluble fluoride of calcium by means of carbonate of lime. The powder, after being calcined, is taken away in sheet-iron boxes, and lixiviated in the manner usual in soda factories.

Besides fluoride of calcium and ferric oxide, the brown residuum contains a small excess of undecomposed cryolite and traces of aluminate of soda. No use has, as yet, been found for this material.

The aluminate of soda solution thus obtained has a slight brown colour. It is introduced into cylindrical sheet-iron cauldrons, placed horizontally, and furnished with stirrers, into which the gases of the reverberatory furnace are passed. Besides the products from the combustion of coke, these gases contain carbonic acid from the carbonate of lime, and are sufficiently hot to give aluminate of soda the right temperature for obtaining oxide of aluminium as a compact precipitate.

A draught is obtained from a ventilator placed at the end of the cylindrical cauldrons.

Carbonic acid completely decomposes aluminate of soda in a few hours. The separation of oxide of aluminium from the carbonate of soda is effected by decantation in very tall sheet-iron cauldrons.

The solutions of carbonate of soda are evaporated to obtain *soda* and *soda crystals*; but the greater part of these liquids is treated by hydrate of lime to produce hydrate of soda. Products prepared in this way are very pure. The carbonate of soda naturally contains no chloride, and is contaminated only by traces of sulphite and hyposulphite proceeding from the impurities of the coke.

The caustic soda furnished by the Harbourg factory contains 75 per cent. of oxide of sodium; we find besides from 4 to 5 per cent. of carbonic acid. The hydrate of alumina is perfectly white, and quite free from iron.

The sulphuric acid required for the transformation of hydrate of alumina into sulphate is prepared in the same factory by the combustion of sulphur. The sulphur furnaces are constructed of bricks, joined by a cement composed of lime and chloride of sodium, which is gradually converted into a very resisting mixture of sulphates of lime and soda. For nitric acid, a mixture of Chili saltpetre and sulphuric acid is substituted, and is put into small cast-iron cauldrons. One hundred parts of sulphuric acid require about seven and-a-half parts of nitric acid.

M. Sauerwein proposes to treat cryolite by the wet way —hydrate of lime taking the place of carbonate. By boiling one part of cryolite with six of hydrate of lime are formed fluoride of calcium and aluminate of soda.

Decomposition takes place readily. M. Sauerwein's reaction is so far analogous to that produced in the Harbourg factory by the dry way, but he does not decompose aluminate of soda by carbonic acid; to obtain hydrate of soda he treats the aluminate by a fresh quantity of cryolite, so as to transform all the soda into fluoride and the aluminium into hydrate.

Simply boiling the aluminate with the cryolite produces the double decomposition.

Thus are formed a solution of neutral fluoride of sodium and a hydrate of alumina precipitate mixed with the excess of cryolite employed. The deposit, properly washed, is treated by weak sulphuric acid, which dissolves only the alumina.

By boiling fluoride of sodium with hydrate of lime we obtain a precipitate of fluoride of calcium, hydrate of soda remaining in solution. This process has the advantage over that used at Harbourg of requiring less fuel; but the sulphate of alumina is impregnated with small quantities of iron, proceeding from the hydrate of lime used for the decomposition.

By treating cryolite by hydrate of lime, M. Tissier obtained only a third of the aluminium in the state of aluminate of soda. M. Sauerwein did not arrive at the same results; he obtained all the sodium and aluminium contained in the cryolite, with the exception of the losses unavoidable in such operations.

By using for the decomposition of the cryolite only half the lime required for the transformation of the aluminium into aluminate of soda, we obtain simultaneously the mixture of aluminate and cryolite necessary to the formation of fluoride of sodium and hydrate of alumina. Thus the two operations can be amalgamated by boiling the cryolite with a quantity of calcareous hydrate insufficient to produce the solution of fluoride of sodium. The author is, however, of opinion that the first process is preferable, because it is to be feared that in dissolving the alumina in sulphuric acid, the fluoride of calcium will be partially decomposed by the sulphuric acid, which would then be wasted.

The treatment by carbonate of lime by the wet or dry way seems preferable to treating cryolite by sulphuric acid, as is done at Copenhagen, where a mixture of sulphate of soda and sulphate of alumina is obtained and purified by repeated crystallisations. The sulphate of alumina is, of course, contaminated with all the impurities of the cryolite; moreover, sulphate of soda is of much less value than either the carbonate or hydrate.

It is also possible that cryolite, decomposed by an insufficient quantity of sulphuric acid, may be transformed into soluble sulphate of soda and fluoride of aluminium. The fluoride of aluminium might be treated separately; but in this case also the soda would be obtained only as sulphate, and M. Sauerwein has not ascertained whether this reaction is practicable.

COTTON IN INDIA.

The following letter has been addressed to the Secretary to the Supreme Government of India:—

Sir,—Having understood that the Government of India is desirous of receiving suggestions from experienced individuals, regarding the best means of causing a considerable increase in the production of herbaceous cotton throughout India; I venture to offer, with all due respect, the following for consideration.

1. The necessity of obtaining an immediate supply to relieve the existing lamentable distress of the cotton mill operatives at home is obvious.

2. In no country but India can an adequate enlarged cultivation be effected.—For although it is probable that

more cotton is grown in China than in the British territories; no means of getting any can be devised in the present state of that empire.—From America it is equally hopeless; in all other producing countries the total is small, as compared with our wants.

3. Taking the adult population of India wearing cotton at 140 millions (children under 10 years use little or none) and that for each person 20 yards of common cotton cloth are required annually, weighing 4lbs; there is now grown for this number, 560 millions of lbs.

4. To increase this quantity materially, I submit that the following measures must be adopted forthwith, notwithstanding the known objection that Government have to interfere in any manner with private enterprize, for this should be considered an exceptional and urgent case of calamity, which no individual efforts in cultivation can permanently relieve within any moderate period, and it cannot be expected that the present charities will be much longer continued in the same degree.

5. A cotton department to be established at each presidency, to consist of one or more members, a secretary and requisite assistants, also inspectors for each district or collectorate, where some kind of cotton can be grown, and I believe there are few, if any, where it cannot.

6. Revenue collectors and commissioners of districts to act under the orders of the said cotton department.

7. That they be directed to organise the local establishments necessary for conducting the transactions in cotton, all of which to be under the control of the said collectors.

8. Public notice to be given that all lands cultivated *bonâ fide* with cotton shall be free of tax or impost of any description for five years.

9. Government waste lands required for cotton to be given free of rent on lease for five years, and to revert to Government in the event of the lessee omitting to cultivate them with cotton.

10. The lessee to have the right of giving up such lands at any time after a crop, for which an advance has been received, have been delivered.

11. Government to reserve the right of objecting to grant leases of lands, when such may be considered inadvisable.

12. Cotton seed to be supplied to the ryot free of cost when it can be obtained.

13. Cash advances to be made, without interest, to the cultivators at the discretion of the local authorities, to be repaid in cotton or money at the option of the ryot; when the crop is gathered and cleaned, Government to have a lien on all such cotton.

14. Cultivators to have the right of selling their cotton grown under advance from Government to any party, after having repaid such advance.

15. The rates which Government will be willing to purchase clean cotton from the ryots and others, whether under advance or not, to be fixed as early as possible in each year.

16. Cotton in transitu to be free from all tolls or imposts.

17. Collectors to issue notice that all clean, good cotton will be received for the first year, and paid for on delivery, at specified district stations, at the rate of ten annas (15d.) per lb. for American and other exotic qualities, and five annas per lb. for the indigenous or native sorts.

18. The cotton so purchased to be either forwarded to the nearest usual shipping port and disposed of by public auction or sold in the same manner in the locality, after a notice of not less than one month.

19. The experiments conducted for 12 or 13 years by that eminent botanist and zealous public servant, Dr. Wight, have proved, that all the American cottons (with the exception perhaps of "Sea Island") can be successfully grown in India, when due discrimination is used as respects soil, climate, and mode of cultivation, and to promote this, especially as regards the New Orleans variety, should be the chief object. It was a matter of great general regret that Dr. Wight's operations were ordered to be suspended; but his services, if they could be obtained, would now be invaluable. There are, however, many scientific and practical men in India known to Government, who could materially aid in forwarding the great object in view; which is by supplying cotton to relieve half a million of operatives from misery and pauperism.

20. It is known that a crop of cotton may be gathered in six or seven months after being planted, and in no country are equal facilities to be found for increasing the cultivation within less than 10 years in a five-fold degree. We have a teeming population unoccupied two-thirds of their time, cheap labour, extensive tracts of uncultivated land, genial soils and climate, moderate taxation, a fostering Government, and peace.

21. For many years previous to 1847, I conducted a series of experiments in cotton on a small scale in Travancore with most of the American kinds, and some others, in order to ascertain the effects of a variety of soil on each sort. The issue of these proved that with due attention to the preparation of soil, cotton of the best quality (excepting Sea Island) could be raised. The price of this article was then, however, so low in Europe, as to hold out no inducement for extensive culture, nor had I the means of carrying it out.

22. It is known that some parties are now extending the growth of American cotton of excellent staple in India, but the produce, even in the aggregate, must for some years be comparatively limited.

23. I have abstained from going into detail on various points, such as cleaning machinery, temporary buildings, qualities, &c., &c., from a fear of trespassing further on your attention.

24. It is possible that some loss may be experienced in carrying these proposals into effect, but when the improving condition of our revenue is considered, that we have some 16 or more crores of rupees in treasury balances —now known to be 19¾ crores—that from six to seven millions of wages are annually lost to our suffering operatives in England, and that the value of our cotton manufactures exported from the United Kingdom in 1861 was computed to have exceeded 55 millions sterling, more than three-fourths of which was made from American grown cotton, a sacrifice by Government of even half a million annually, in adopting this scheme, might be warranted and sustained with eventual advantage to millions of our fellow-subjects, for we should in less than 10 years be almost wholly independent of America. In the event of war with that country, the supply from thence would be cut off, when the same distress that now prevails must ensue.

Requesting you will have the goodness to bring this communication to the notice of the Right Hon. the Governor-General of India, I am, &c.,

W. HUXHAM.

Calicut, 9th March, 1863.

EXAMINATION PAPERS, 1863.

The following are the Examination Papers set in the various subjects at the Society's Final Examinations, held in May last:—

(Continued from page 569.)

GEOMETRY.

THREE HOURS ALLOWED.

1. If one side of a triangle be produced, the exterior angle is greater than either of the interior opposite angles.

2. If a straight line fall upon two parallel straight lines, it makes the alternate angles equal to one another, and the exterior angle equal to the interior and opposite upon the same side, and likewise the two interior angles upon the same side together equal to two right angles.

3. Parallelograms upon the same base, and between the same parallels, are equal to one another.

4. Describe a parallelogram equal to a given rectilineal figure, and having an angle equal to a given rectilineal angle.

5. If a straight line be divided into two equal parts, and also into two unequal parts, the rectangle contained by the unequal parts, together with the square of the line between the points of section, is equal to the square of half the line.

6. One circle cannot touch or cut another in more than two points.

7. In equal circles the angles which stand upon equal circumferences are equal to one another, whether they be at the centres or the circumferences.

8. Describe an isosceles triangle having each of the angles at the base double of the third angle.

9. Similar triangles are to one another in the duplicate ratio of their homologous sides.

10. In right-angle triangles the rectilineal figure described upon the side opposite the right angle is equal to the similar and similarly described figures upon the sides containing the right angle. Why are the words "Similarly described" necessary?

11. If two straight lines be parallel, and one of them is at right angles to a plane, the other shall also be at right angles to the same plane.

12. Every solid angle is contained by plane angles, which together are less than four right angles.

Problems.

1. If, from a point without a parallelogram, lines be drawn to the extremities of two adjacent sides, and of the diagonal which they include; then of the triangles so formed, that which has the diagonal for its base is equal to the sum of the other two.

2. Trisect a parallelogram by lines drawn from a given point in one of its sides.

3. Given the base, the altitude, and the difference of the two sides of a triangle: construct it.

4. In any triangle the squares of two sides are together double of the two squares of half the base, and of the straight line joining its bisection with the opposite angle.

5. Given two circles, it is required to find a point from which tangents may be drawn to each, equal to two given straight lines.

6. A chord of a circle is drawn cutting a diameter at an angle which is equal to half a right angle, the sum of the squares of the two portions of the chord is equal to twice the square of the radius.

7. If a circle roll within another of twice its size, any point in its circumference will trace out a diameter of the larger circle.

8. Show that a circle may be inscribed in any quadrilateral figure if the sums of its opposite sides are equal.

9. Describe a circle which shall pass through a given point, and touch two given equal circles.

10. The rectangle contained by the sides of any triangle is to the rectangle of the radii of the inscribed and circumscribed circles as twice the perimeter is to the base.

MENSURATION.

THREE HOURS ALLOWED.

1. Multiply 5 feet 7 inches by 3 feet 9 inches by the method of cross multiplication; explaining by a diagram each step in the process.

2. The length of a side of a triangle is 9 feet 9 inches, and its distance from the opposite angle is 6 feet 5 inches, the length of another side is 8 feet 3 inches; find its distance from the opposite angle, employing the method of duodecimals.

3. The diagonal of a sheet of paper is twice as long as one of the sides, which is 10·5 inches; find the length of the other side.

4. Lay down the figure of the field and find its area from the following notes:—

	AC.	
	1,300	
	890	680 to D.
to B 220	215	
	⊙A	

Find what would have been the notes of this field if B D had been taken as the main line.

5. Find the area of a four-sided figure of which two opposite sides are parallel.

The roof of a room 20 feet square rises in four compartments to the height of 12 feet, and terminates in a skylight 10 feet square; find the cost of slating it at £2 17s. per square.

6. What would be the cost of the covering and guttering of the roof of a church with lead at £1 19s. per cwt., the length of the roof being 82 feet 9 inches, and its girt 65 feet 3 inches, and the breadth of the guttering 1 foot 9 inches, the thickness of the lead $\frac{1}{8}$th of an inch, and the weight of a square foot of lead an inch thick being 59 lbs.?

7. Supposing a French metre, which is one ten millionth part of the fourth of a meridian on the earth's surface, to be 39·37 inches, find the number of miles in the earth's diameter.

8. Find the area of a segment of a circle, having given (1) the chord and the diameter, (2) the height and the diameter, (3) the height and the chord.

9. A cube is divided into two parts by a plane which passes through one angle and the diagonal of one of the opposite sides; compare the volumes of the two parts into which the cube is divided.

10. If a sphere and the circumscribing cylinder be cut by two planes at right angles to the axis of the cylinder, the surfaces of the sphere and cylinder between these planes will be equal.

11. A gallon contains 277·274 cubic inches; what would be the diameter of a bushel measure supposing its depth to be equal to its diameter?

12. How much of the earth's surface is visible from a balloon five miles high? Approximately.

13. The height of a cone is 10 feet 6 inches, its slant side 12 feet 9 inches; find its volume.

14. Find the content of a haystack with a circular base.

TRIGONOMETRY.

THREE HOURS ALLOWED.

1. If A, B, C, be a triangle, and $\text{Sin.}^2 A = \text{Sin.}^2 B - \text{Sin}^2 C$, show that it is right-angled.

2. Prove the formulas:—

$$(1.)\ \text{Tan. } A + \text{Sec. } A = \tan\left(\frac{A}{2} + \frac{\pi}{4}\right)$$

$$(2.)\ \frac{\text{Sin. } A + 2\,\text{Sin. } 3A + \text{Sin. } 5A}{\text{Sin. } 3A + 2\,\text{Sin. } 5A + \text{Sin. } 7A} = \frac{\text{Sin } 3A}{\text{Sin } 5A}$$

3. Find the sine 18°, tan. 37° 30′, and sec. 54°.

4. If A, B, C, be a right-angled triangle, C being the right angle and C D, C E be drawn making angles α & β, with the hypothenuse, the area of C D E,

$$= \frac{a^2 b^2}{2 c^2} (\text{Cot. } \alpha - \text{Cot. } \beta.)$$

5. Show that—

$$\text{Sin. } (A + B)\ \text{Sin. } (A - B) = (\text{Sin. } A + \text{Sin. } B)(\text{Sin. } A - \text{Sin. } B)$$

$$\text{Cos. } (A + B)\ \text{Cos. } (A - B) = (\text{Cos. } A + \text{Sin. } B)(\text{Cos. } A - \text{Sin. } B.)$$

6. A vessel appears due north of an observer, and four miles distant; half an hour afterwards it is due east, and at the end of another half hour it disappears in the S.E. Find its course and nearest distance from the observer.

7. In a triangle prove $c^2 = a^2 + b^2 - 2ab$ Cos. C. Then show how this formula may be adapted to logarithmic computation.

8. Solve the triangle when a, A, and $b + c$ are known.

9. Expand Sin. x in terms of the powers of x.

If $x = \text{Cosec } x$, show that $x = \frac{557}{550}$ nearly.

10. A, B, C, are three points in a straight line, in the same vertical plane with an object P; $AB = a$, $BC = b$; the angle of elevation of P from B is twice as great as from A; and from C three times as great. Find the height of P.

11. In a spherical triangle find Cos. a in terms of the cosines and sines of the angles.

12. The angles at the base of an isosceles spherical triangle are equal.

13. In a right-angled spherical triangle, if D be the length of the arc CD, drawn at right angles to the hypothenuse AB, show that—

$$\text{Cot. } D = \sqrt{\text{Cot. }^2 a + \text{Cot. }^2 b}.$$

14. Prove the formulas—

$$\text{Cos. } \tfrac{1}{2}(A + B) \text{ Cos. } \tfrac{1}{2} c = \text{Cos. } \tfrac{1}{2}(a + b) \text{ Sin. } \tfrac{1}{2} C$$
$$\text{Cos. } \tfrac{1}{2}(A - B) \text{ Sin. } \tfrac{1}{2} c = \text{Sin. } \tfrac{1}{2}(a + b) \text{ Sin. } \tfrac{1}{2} C$$

CONIC SECTIONS.

THREE HOURS ALLOWED.

Section I.—Geometrical Conics.

1. Define the conic sections (1) as plane sections of a cone, (2) in reference to a focus and directrix. From the latter definition deduce methods for describing a parabola by continual motion and by points.

2. Prove that the tangent at any point of a parabola bisects the angle between the focal distance and the perpendicular on the directrix. What form does this theorem take in the ellipse and hyperbola?

3. If MP is an ordinate to a parabola at the point P, prove that $PM^2 = 4\,AS.\,AM$. What modifications are required in this theorem when the co-ordinate axes are oblique?

4. If two chords of a parabola intersect each other, the rectangles contained by their segments are in the ratio of the parameters of the diameters which bisect the chords.

5. If S and H are the foci of an ellipse, and P is any point on the curve, prove that $SP + PH = 2CA$; and hence prove that the tangent at P is equally inclined to SP and HP.

6. If the normal to an ellipse at P meets the major axis in G, show that $SG : SP :: CS : CA$.

7. Define conjugate diameters of an ellipse; and show that the area of a parallelogram circumscribing an ellipse and having its sides parallel to a pair of conjugate diameters is constant.

8. A part of a branch of the hyperbola is drawn; how do you ascertain it to be a part of a hyperbola? Find its centre, axis, foci, directrices, and asymptotes.

9. Prove that the area of the triangle contained between the asymptotes of a hyperbola and the tangent at any point is constant.

10. A series of parallel chords is drawn in a circle; the diameter is drawn at right angles to all, at the extremities of which tangents are drawn to the circle. The circle is projected into an ellipse; what are the projective theorems of the lines?

Section II.—Analytical Conics.

11. Construct formulæ for passing from one rectangular system of co-ordinates to another rectangular system. The equation to a straight line being $y = b$, what is the equation when the axes are turned through 45°?

12. Find the length of the perpendicular from (2,7) on $ax + by + c = 0$.

13. Prove that all angles in the same segment of a circle are equal to another, and that the angle *of* a segment greater than a semi-circle is greater than a right angle.

14. If the base of a triangle is given, and one base angle is twice the other, prove that the locus of the vertex is a hyperbola, of which the angle between the asymptotes is 120°, and the centre is at a tri-secting point of the base.

15. Prove that the point of intersection of a tangent to a parabola with the perpendicular on it from the focus is in the tangent of the parabola at its vertex.

16. Prove analytically the theorems contained in questions 5, 6, 7, 9, of the preceding section.

17. Show that the equation of the second degree may always be reduced to $y^2 = 4MX + NX^2$. When does the equation represent (1) an ellipse, (2) a parabola, (3) a hyperbola?

(*To be continued.*)

Proceedings of Institutions.

◆

Greville House (Paddington) Working Men's Library and Reading Room.—The sixth annual report states that the attempt made more than six years ago by a few friends to establish a reading-room and library for working men in Paddington, has met with considerable success, and the committee desire to record their thankfulness for the present flourishing state of the Institution. It is impossible, however, not to express some regret that an undertaking which has for years been conferring real benefit on the mechanics and artisans of the neighbourhood, has, as yet, attracted but a limited degree either of notice or support from the richer classes. There is now a library of nearly 1,200 volumes, from which the members can take books home; a reading-room, furnished with the principal journals and with various periodicals; and a system of evening classes, where reading, writing, arithmetic, mechanical drawing, and singing are taught. There is also a Bible-class weekly. The terms of subscription are twopence per week for the use of the library and reading-room, subject to a reduction when a member subscribes by the month or quarter. The charges for the classes are 6d. per month, and 1s. 3d. per quarter, for writing and arithmetic; and 8d. per month, or 1s. 6d. per quarter, for drawing. There is an elementary and an advanced singing class. Members of the Institution pay 1s. per quarter for the former, and 1s. 6d. per quarter for the latter. Non-subscribers to the Institution are admitted to the classes on a higher scale of payments. The number of members on the books at present is about 230, of whom about 110 pay extra, and avail themselves of the classes, or some of them. The number of books taken out of the library during 1862, was about 4,300. Prizes were offered to the members of the Institution for the study of "Paley's Natural Theology," and of "The Chemistry of Creation," and were extremely well competed for, though by a smaller number of candidates than might have been wished. The committee look to the gradual development of this system of examination as likely to prove of sterling value to the Institution, both by attracting to it the most intelligent of the working-classes, and by encouraging them to to turn their attention to solid and elevating acquirements. A public meeting was held, at which Mr. Robert Hanbury, M.P., kindly presided, and delivered the prizes to the successful candidates. The meeting was also addressed by the Rev. A. Boyd, Mr. Martin Ware, jun., Mr. MacGregor, and other friends; and the Greville House band performed several pieces of music. The subjects for examination for 1863, are "Lessons on Morals"—a well-known work, attributed to Archbishop Whateley,—and "The Science of Health"—a very useful treatise on sanitary subjects. In the course of the past year, Greville House has been brought into union with the Society of Arts. The band, the commencement of which was noticed last year, has been maintained with much zeal, and now numbers about thirty-two performers. It is in contemplation to reinforce it, by the addition of reed and stringed instruments. The owner of a plot of waste ground near at hand having kindly placed it at the disposal of the Institution during the summer months, a cricket club was set up, and was very popular during the long evenings. The elocution class has also been a source of much interest, and has borne fruit in some spirited recitations, on the occasion of the annual soirée of the members and their friends, in the winter quarter. The usual course of lectures has been given, and the committee feel that their most grateful acknowledgments are due to the gentlemen whose kindness has enabled them to offer to their members instruction and recreation skilfully combined. The balance sheet shows that the expenditure has been £337 16s. 2d., and that there is a balance due to the treasurer of £22 14s. 8d.

NOTTING-HILL WORKING MEN'S INSTITUTE. — The quarterly meeting was held at Stormont House on June 29th. The chair was taken by Wm. Anketell, Esq. The minutes of the last meeting having been confirmed, a discussion ensued upon the finances of the Institution, a heavy debt being due to J. E. Gray, Esq., Treasurer. Some members suggested the removal of the Institution to a more central spot, but the meeting generally deemed it inexpedient to do so at present. The Treasurer addressed the meeting on the subject of Adult Education, and advised the members to avail themselves of the advantages offered by the "Metropolitan Association for Promoting the Education of Adults," with which Association the Institution was in Union. He introduced Mr. H. H. Sales, the Secretary of that Association, and requested him to explain the plans and operations of the Association. Mr. Sales said that the experience of the Notting-hill Institution was the same as that of the majority of Institutions established for the mental improvement of the working classes. There was a general complaint that the classes for instruction did not flourish to the extent that was to be desired. The Metropolitan Association did not announce that it had found a golden remedy for the evil deplored, but the Society of Arts had now, for some years past, endeavoured to give to the pupils of such Institutions the same stimulus to exertion as was afforded to the students of the middle and upper classes through the medium of the Universities, and in this work the Metropolitan Association was successfully co-operating. He then entered into the details of the scheme of Examination—compared the results of the various Local Boards already established—and, from the statistical returns, illustrated the good the Association had accomplished since its establishment. He expressed his opinion that the same satisfactory results would be gained from the establishment of a Local Board in connection with the Notting-hill Institution. Several speakers cordially approved of the scheme, and two gentlemen volunteered to conduct classes during the ensuing winter season. The Chairman expressed a most favourable opinion of the operations of the Metropolitan Association, and on behalf of the meeting thanked Mr. Sales for the statement he had made. After the transaction of some general business, a cordial vote of thanks to the Chairman closed the proceedings.

PARLIAMENTARY REPORTS.

SESSIONAL PRINTED PAPERS.

Par.
Numb.

Delivered on 27th and 29th June, 1863.

366. Kitchen and Refreshment Rooms (House of Commons)—Second Report.
387. Naval Receipt and Expenditure—Return.
45 (5). Trade and Navigation Accounts (31st May, 1863.)
319 (1). Carriages (Metropolis)—Further Return.
390. Kensington Gore Museum—Estimates, Plans, &c.
396. Kensington Gore Exhibition Buildings—Copy of Reports.
181. Bills—Poisoning.
188. " Bakehouse Regulation (Lords Amendments).
190. Bills—English Church Services in Wales (amended in Committee, and on Re commitment).
191. " Prison Ministers (Lords Amendments).
192. " Public Works (Manufacturing Districts) (amended).
North America (Trade with Matamoros) — Correspondence (No 11.)
Brazil (Decision of His Majesty the King of the Belgians in the case of the Officers of the *Forte*) - Correspondence.
Brazil (Case of the vessel *Prince of Wales*)—Memorandum.
Greece (Union of the Ionian Islands)—Despatch (No. 3.)

Delivered on 30th June, 1863.

351. East India (Civil Fund)—Return.
382. Exhibition Building—Captain Fowke's Estimate.
386. St. Ive (Liskeard) School—Return.
396. Kensington Gore Exhibition Buildings—Reports (a corrected copy).
397. Election Petitions Bill—Report from the Select Committee.
186. Bills—Election Petitions (as amended by the Select Committee.)
189. " Stipendiary Magistrates (amended).
193. " Misappropriation by Servants (amended.)
Poland—Correspondence relating to the Negotiations of 1814 and 1815.

Delivered on 1st July, 1863.

50 (6.) Railway and Canal Bills—Seventh Report of the General Committee.
360. Miscellaneous Receipts (1862-3)—Return.
381. Fire Insurances—Return.
392. Education (Ireland)—Annual Report.
395. Brazil (Officers of the "Forte")—Copy of Case submitted to His Majesty the King of the Belgians.
396 (1.) Kensington Gore Exhibition Buildings—Further Return.
194. Bill—Removal and Punishment of Prisoners.
Brazil (Liberated Slaves)—Correspondence.
Poland—Translations of Papers.

Delivered on 2nd July, 1863.

344. Lime Light—Copy of Reports.
384. Kitchen and Refreshment Rooms (House of Commons)—Third Report.
391. Factories—Copy of Memorials, &c.
195. Bills—Security from Violence (Lords Amendments).
196. " Thames Embankment (North Side) (Lords Amendment).
127. " London Coal and Wine Duties Continuance—Lords Amendments).
198. " Public Works and Fisheries Acts Amendment.
Greece—Papers (No. 4).

Delivered on 3rd July, 1863.

368. Stone Weirs—Return.
394. East India (Religious Endowments)—Return.
398. Metropolitan Police (Finsbury)—Return.
202. Industrial and Provident Societies (Friendly Societies in England—Return.

Copies of the under-mentioned Papers, presented by Command, will be delivered to Members of Parliament applying for the same at the Office for the Sale of Parliamentary Papers, House of Commons:—

41. Queen's University (Ireland)—Report.
42. Royal Dublin Society, &c.—Report.
43. Judicial Statistics, 1862.
44. Public Works (Ireland)—Thirty-first Report.

Delivered on the 4th and 6th July, 1863.

399. Admiralty Court (Ireland) (Sittings, &c.)—Return.
401. Scientific Institutions (Dublin)—Return.
403. Volunteers—Paper.
259 (1.) Shannon Fisheries—Further Return.
378. Bishops Appointment Fees; Ordination, &c., Fees—Return.
406. Mhow Court Martial—Paper.
410. Civil Contingencies Fund - Accounts.
200. Bills—Greenwich Hospital (Provision for Widows).
201. " Union Relief Aid Acts Continuance.
199. " Navy Prize Money, &c. (amended).
202. " Vaccination (Scotland) (as amended in Committee, and on Consideration of Report).
203. " Nuisances Removal Act (1855) Amendment (amended),
206. " Pilotage Orders Confirmation.
207. " Waterworks Clauses.
209. " Companies Clauses.
Children's Employment Commission (1862)—First Report.
North America (No. 12) Seizure of the "Will o' The Wisp —Correspondence.

SESSION 1862.

307 (D.) Poor Rates and Pauperism—Return (D.)

Delivered on 7th July, 1863.

405. Sydney Mint—Return.
407. Lieutenant Tinling—Return.
380. Trade and Manufactures (Scotland)—Return.
205. Bills— Waywardens Contracts.
208. " Railway Clauses.
210. " Vaccination (Ireland) (Lords Amendments),
211. " Growing Crops Seizure (Ireland).

PATENT LAW AMENDMENT ACT.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[*From Gazette, July* 10*th*, 1863.]

Dated 21*st March*, 1863.

758. J. M. Hetherington, Manchester—Imp. in machinery or apparatus for combing cotton and other fibrous materials.

Dated 28*th May*, 1863.

1335. F. R. Piltz, Frederick-street, Hampstead-road—Imp. in the mode of producing ornamental surfaces, applicable to the general purposes of decoration.

Dated 30*th May*, 1863.

1357. E. T. Hughes, 123, Chancery-lane—Imp. in apparatus for the transmission of motive power. (A com.)

Dated 4*th June*, 1863.

1395. Madame L. De Wailly, Paris—An improved method of preserving carpets from the effect of dust.

Dated 8*th June*, 1863.

1411. J. Hogg, jun, 49, Fleet-street—Imp. in the manufacture of show cards.

Dated 11*th June*, 1863.

1454. C. L. V. Tenac, Tredegar, Monmouthshire—An imp. in railway wooden sleepers.

Dated 13*th June*, 1863.

1484. A. Méhu, Petit Talard, near St. Malo—An improved helm for working the rudders of ships or vessels.

Dated 15*th June*, 1863.

1492. J. Forrester, Burslem, Staffordshire—Imp. in the manufacture of bricks, quarries, slabs, tiles, earthenware pipes, and other earthenware or ceramic articles.

Dated 16*th June*, 1863.

1502. F. S. Williams, Boston—An improved apparatus for shaping plastic materials and hot but not melted metals by means of pressure, percussion, or rolling. (A com.)

1508. J. Steele and W. Mason, Leeds—Imp. in apparatus for removing the bran or outer skin from wheat and other grain.

Dated 17*th June*, 1863.

1518. W. Crofts, New Lenton, near Nottingham—Imp. in the production of fabrics by lace machinery, and in means or apparatus employed therein.

Dated 18*th June*, 1863.

1526. W. S. Lowe, Disley, Chester, and J. Cheetham, Oldham—Imp. in self-acting mules for spinning cotton and other fibrous materials.

Dated 19*th June*, 1863.

1534. S. Middleton, Newtown cottage, Hants, near Newbury, Berks. Imp. in the manufacture of iron or other metal shoes, and in the method of securing the same to the hoofs of horses and other animals without nails.

Dated 20*th June*, 1863.

1548. P. Fassio, 1, Rue des Orangers, Nismes—A new method of connecting several fire places with one chimney.

1560. J. Booth, jun, Halifax—Imp. in winding machines.

Dated 24*th June*, 1863.

1590. T. Redwood, Summerfield Works, Lower Homerton—Improved apparatus for straining or for mixing and straining liquid and solid substances.

Dated 25*th June*, 1863.

1600. T. Page, Adelphi-terrace—Imp. in horse shoes and in their fastenings.

1602. R. Mushet, Coleford—Imp. in the manufacture of iron and steel.

1604. H. G. Craig, Passage West, Cork—Imp. in machinery for manufacturing or preparing iron and other metal plates for shipbuilding and other purposes.

1606. A. Watson, King-street—An improved fastening.

Dated 26*th June*, 1863.

1680. A. Tulpin, Manchester—Imp. in machinery for stretching and drying fabrics. (A com.)

1610. G. Boccius, Henrietta-street—An improved composition suitable for the manufacture of candles and other like articles, and of pomatum, and an improved wick for burning with such composition.

1612. J. Griffiths, Derby—Imp. in machinery for puddling iron and steel.

Dated 27*th June*, 1863.

1616. W. Bradshaw and J. Bradshaw, Blackburn—Imp. in looms for weaving.

1618. J. Chatterton, Highbury—Imp. in lining iron and other hollow vessels, and in manufacturing corrugated tubes of plastic materials.

Dated 29*th June*, 1863.

1620. W. Andrews, 237, Gresham-house, Old Broad street—Imp. in apparatus for insulating telegraph wires.

1622. L. E. Hicks, New York—An imp. in inkstands.

Dated 30*th June*, 1863.

1624. L. F. A. B. Marulaz, Gueret Creuse, France—Imp. in the manufacture of combs.

1626. J. Simpson, Darlaston, Staffordshire—Certain imp. in iron hurdles and fencing.

1628. A. K. Richards, Berners-street, Oxford-street—Imp. in ordnance and fire arms, and in projectiles to be used therewith.

1630. A. Silvester, Clapham-road, Surrey—Imp. in apparatus to be used in the exhibition of dramatic and other like performances.

Dated 1*st July*, 1863.

1634. T. Alliston, 237, Euston-road, and R. Swift, 2, Hardy-terrace, Hounslow—An improved mode of and apparatus for manufacturing metallic joints for bedsteads, and the application of such joints to certain parts of bedsteads.

1638. R. C. Clapham, Walker, Northumberland—Imp. in the manufacture of hyposulphite of soda, sulphite of soda, and sulphite of lime

1640. J. Harvey and J. S. Harvey, Hanover-square, Newcastle-on-Tyne—Imp. in machinery for cutting tobacco into cakes suitable for the press.

1642. H. Hutchinson, 26, Rue Notre Dame des Victoires, Paris—Imp. in boots and shoes.

1644. J. Cole and J. Cole, jun., Coventry—Imp. in looms for weaving.

Dated 2*nd July*, 1863.

1650. F. Ransome, Ipswich, Suffolk—Imp. in coating and preserving iron ships or vessels, or iron used for other purposes.

INVENTION WITH COMPLETE SPECIFICATION FILED.

1643. G. T. Bousfield, Loughborough-park, Brixton—A new and useful machine for preparing cotton, wool, and other fibrous material. (A com.)—1st July, 1863.

1667. H. A. Bonneville, 24, Rue du Mont Thabor, Paris—An improved machine constructed on self-moving principles for obtaining motive-power. (A com.)—4th July, 1863.

1668. H. A. Bonneville, 24, Rue du Mont Thabor, Paris—Imp. in the manufacture of telegraphic wires, and in the apparatus connected therewith. (A com.)—4th July, 1863.

1690. G. P. Reed, Massachusetts, U.S.—Certain new and useful improvements in watches or timekeepers.—7th July, 1863.

PATENTS SEALED.

[*From Gazette, July* 10*th*, 1863.]

July 10*th*.

106. C. H. Townsend and J. Young.
107. R. A. Brooman.
118. J. S. Butler.
129. E. Howes.
130. T. C. Barraclough.
132. J. Harrop.
134. R. Ferrier.
140. A. Prince.
141. W. E. Newton.
152. I. Ashe.
202. N. Wood and J. Stockley.
259. E. G. Muntz.
292. F. G. Grice.
391. J. Grantham.
682. C. T. Lutwyche and A. Lutwyche.
741. G. H. Smith.
1090. E. Mitchell.

[*From Gazette, July* 14*th*, 1863.]

July 20*th*.

131. T. C. Barraclough.
133. G. Graham and J. McLeod.
137. J. P. Bath.
139. J. W. Child.
143. R. A. Brooman.
150. J. Edwards.
157. E. Sabel.
164. J. J. Lundy.
185. W. Clark.
187. E. Bazin.
189. Sir C. Linsday.
230. A. L. Lietout and J. B. Roisin.
314. G. T. Bousfield.
321. J. A. Manning.
408. W. Clark.
437. D. Tassin.
457. W. Trustum.
467. W. Clark.
468. W. Clark.
485. W. H. Gauntlett.
514. W. Clark.
598. D. B. Parsons.
644. W. E. Newton.
906. S. A. Couperie.
1007. J. W. Proffitt and W. L. Duncan.
1047. H. E. Carchon and E. F. Raybaud.
1099. J. Badart.
1159. G. T. Bousfield.
1213. G. T. Bousfield.

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

[*From Gazette, July* 14*th*, 1863.]

July 6*th*.

1644. R. Pollit.

July 9*th*.

1683. F. Ayckbourn.
1751. W. Barrett.
1795. W. E. Taylor.
1871. W. E. Newton.

July 10*th*.

1695. C. G. Hill.
1696. W. Allen and W. Allen.
1709. A. V. Newton.

July 11*th*.

1685. F. Mordan.
1834. Marquis G. C. A. d'Auxy.
1670, G. Davies.

PATENTS ON WHICH THE STAMP DUTY OF £100 HAS BEEN PAID.

[*From Gazette, July* 14*th*, 1863.]

July 6*th*.

1590. A. L. S. Chenot & E. C. A. Chenot.
1616. W. B. Adams.

July 9*th*.

1635. J. Fowler, jun., & W. Worby.
1720. R. Richardson and J. E Billups.

July 10*th*.

1766. E. Lord, T. Lord, A. Lord, and W. Lord.